



All fasteners subject to metric dimension of International Organization for Standardization.

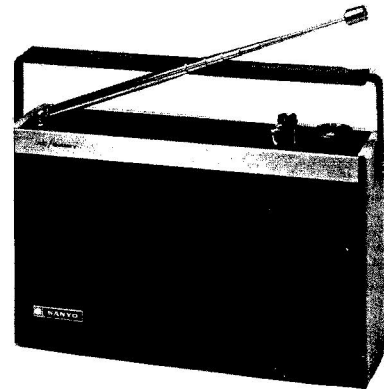
Solid State, FM/AM 3-band Portable Radio

MODEL **10GA-895Z**

SERVICE MANUAL

SANYO ELECTRIC CO., LTD.

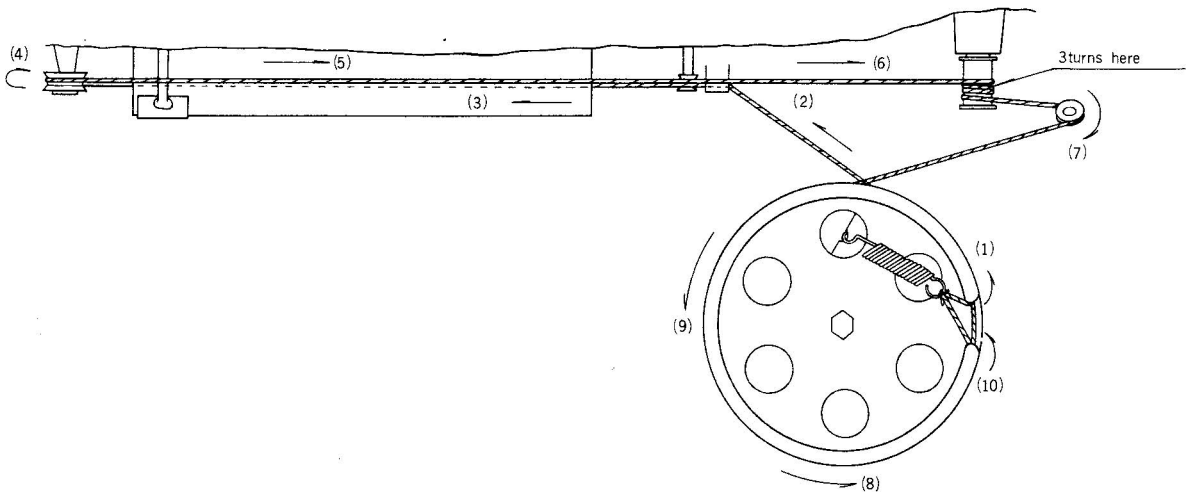
INTERNATIONAL DIVISION: SANYO ELECTRIC TRADING CO., LTD.
OSAKA JAPAN



SPECIFICATIONS

FREQUENCY RANGES:	FM 87.5 - 104 MHz SW 5.95 - 15.5 MHz MW 510 - 1605 KHz	INTEGRATED CIRCUIT:	LA-1200 or LA-1201, IF Stage
INTERMEDIATE FREQUENCY:	FM 10.7 MHz AM 455 KHz	TRANSISTORS:	Tr1 2SC668, FM RF Amplifier Tr2 2SC772, FM Converter Tr3 2SC829, AM Converter Tr4 2SB185, Audio Amplifier Tr5 2SB186, Driver Tr6, 7 2SB22, Power Output
SENSITIVITY: (for 50mW output)	FM 3 μ V SW 80 μ V/m MW 80 μ V/m	DIODES:	D1, 2 MA-26, AM Stabilizer D3 1S188, AM Oscillator Limiter D401 1S188, FM AGC D402 1S188, FM Discriminator D403 1S188, FM Discriminator
POWER OUTPUT:	Maximum 800 mW Undistorted 550 mW	SPEAKER:	4" Permanent Dynamic Type 4 ohm voice coil impedance
POWER SUPPLY:	Four 1½-volt "size D" standard batteries AC 220-volt household current	DIMENSIONS:	9½" wide x 5-5/8" high x 2¼" deep
CURRENT DRAIN:	No signal 20 mA Maximum 230 mA	WEIGHT:	2.4 lbs.

DIAL CORD STRINGING



HOW TO TAKE OUT CHASSIS

1. Loosen three oval counter-sunk head screws on the bottom of radio housing.
2. Lift and open the back of housing.
3. Remove three screws (red colored on their heads) which fasten the chassis to the front housing.
4. Take out the chassis from it carefully.

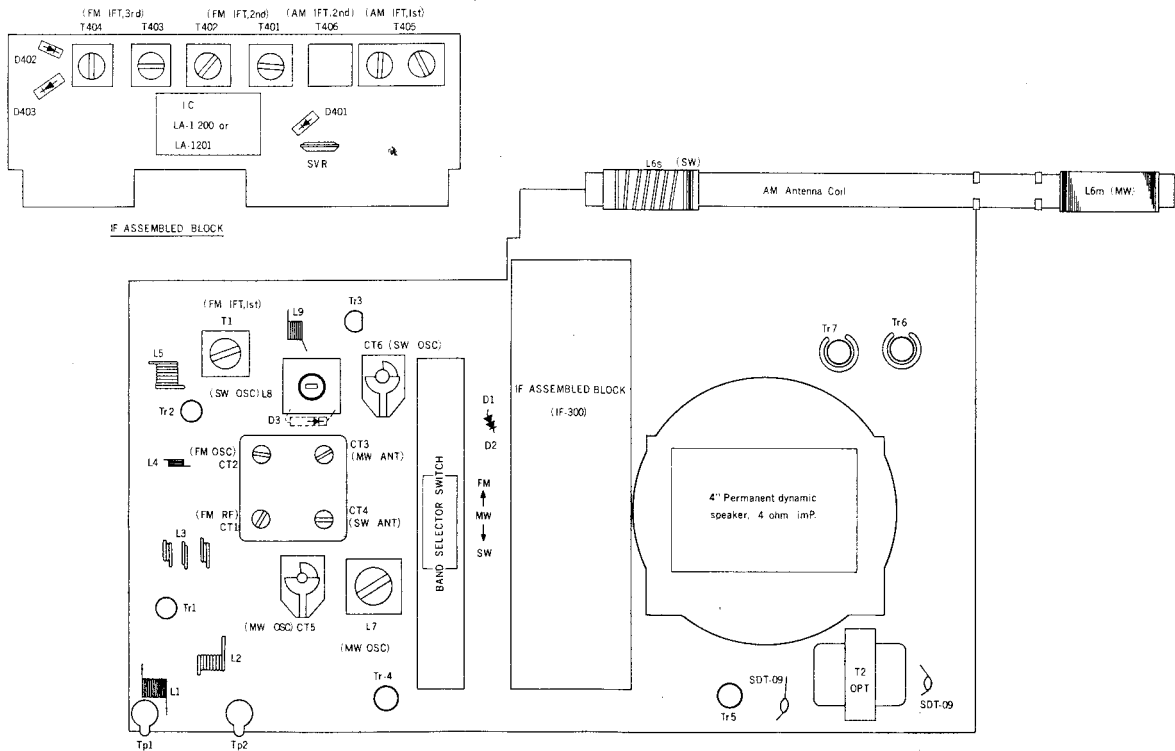
ALIGNMENT OF IF STAGE

PROCEDURES	SETTING OF CONTROL KNOBS ON RADIOS	ALIGNMENT FREQUENCY	TEST EQUIPMENT CONNECTION	ADJUSTMENT
FM IF STAGE	Volume control at minimum. Band switch at FM.	10.7 MHz	Connect output cable of FM sweep marker generator to Tp-1 and Tp-2, input cable thru network to Tp-3 and Tp-4.	Tune T403, T402 & T401 for maximum gain and symmetry of response curve.
FM IF STAGE	The same as above.	10.7 MHz	Connect output cable of FM sweep marker generator to Tp-1 and Tp-2, input cable thru network to Tp-5 and Tp-4.	Tune T404 for perfect symmetry and linearity of S-shape curve.
AM IF STAGE	Volume control at maximum. Band switch at MW. Dial pointer at 510 KHz.	455 KHz	Connect output cable of AM signal Generator to IRE loop.	Tune T405 for maximum audio output.

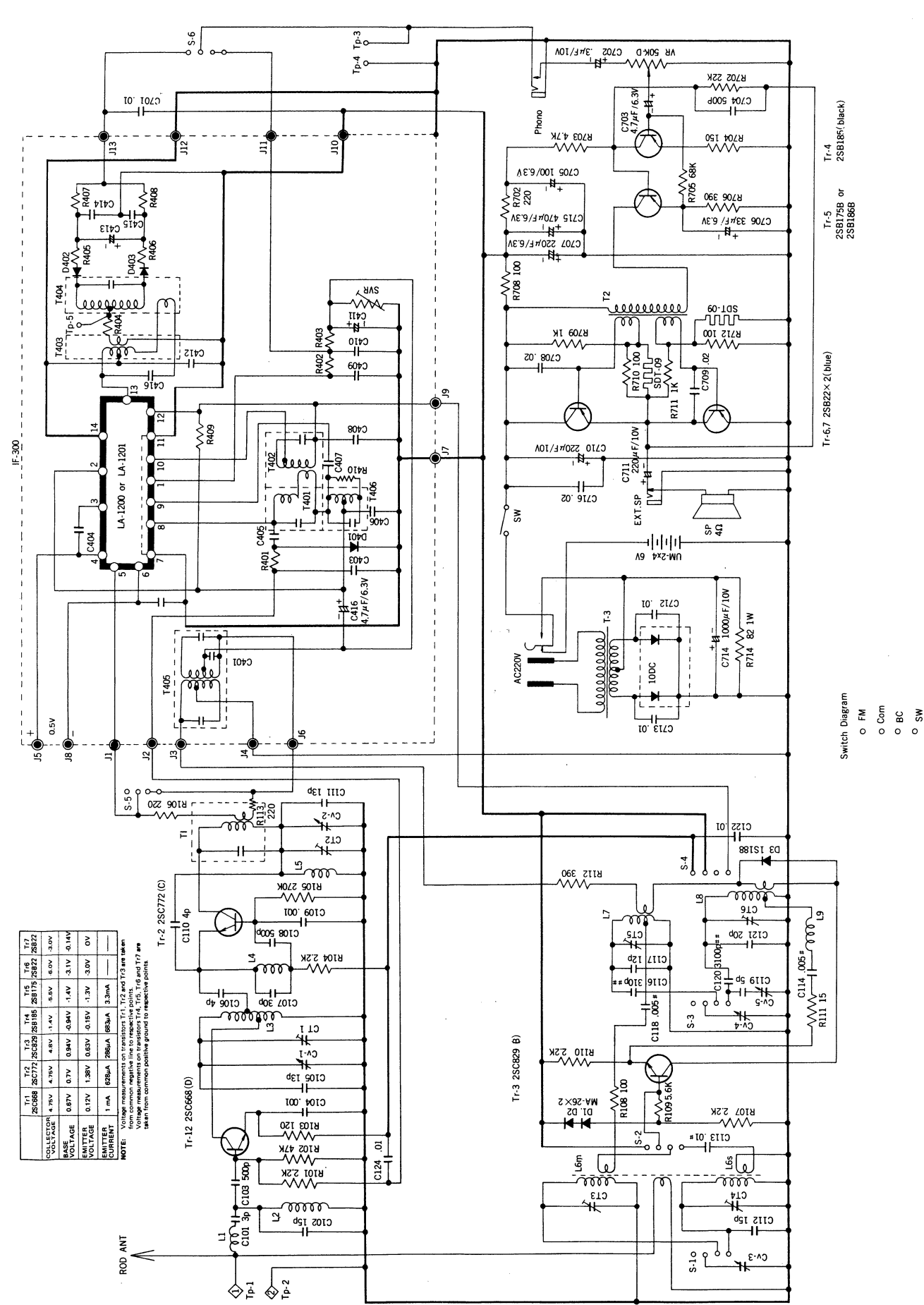
BAND COVERAGE & TRACKING ALIGNMENT

PROCEDURES	POSITION OF BAND SWITCH	SIGNAL INPUT	FREQUENCY OF SIGNAL GEN.	DIAL SETTING OF RADIO	COMPONENTS TO BE ADJUSTED
MW BAND COVERAGE	MW	IRE LOOP	505 KHz	Lowest End	MW Oscillator Coil L7
	"	"	1650 KHz	Highest End	MW Oscillator Trimmer CT5
MW BAND TRACKING	MW	IRE LOOP	570 KHz	570 KHz	MW Antenna Coil L6m
	"	"	1400 KHz	1400 KHz	MW Antenna Trimmer CT3
SW BAND COVERAGE	SW	IRE LOOP	5.8 MHz	Lowest End	SW Oscillator Coil L8
	"	"	16.0 MHz	Highest End	SW Oscillator Trimmer CT6
SW BAND TRACKING	SW	IRE LOOP	6.5 MHz	6.5 MHz	SW Antenna Coil L6s
	"	"	15.0 MHz	15.0 MHz	SW Antenna Trimmer CT4
FM BAND COVERAGE	FM	DUMMY ANT.	87 MHz	88 MHz	FM Oscillator Coil L5
	"	"	104.5 MHz	104 MHz	FM Oscillator Trimmer CT2
FM IF STAGE	FM	DUMMY ANT.	90 MHz	90 MHz	FM IF Transf. T1 & T404
FM BAND TRACKING	FM	DUMMY ANT.	90 MHz	90 MHz	FM RF Coil L3
	"	"	103 MHz	103 MHz	FM RF Trimmer CT1

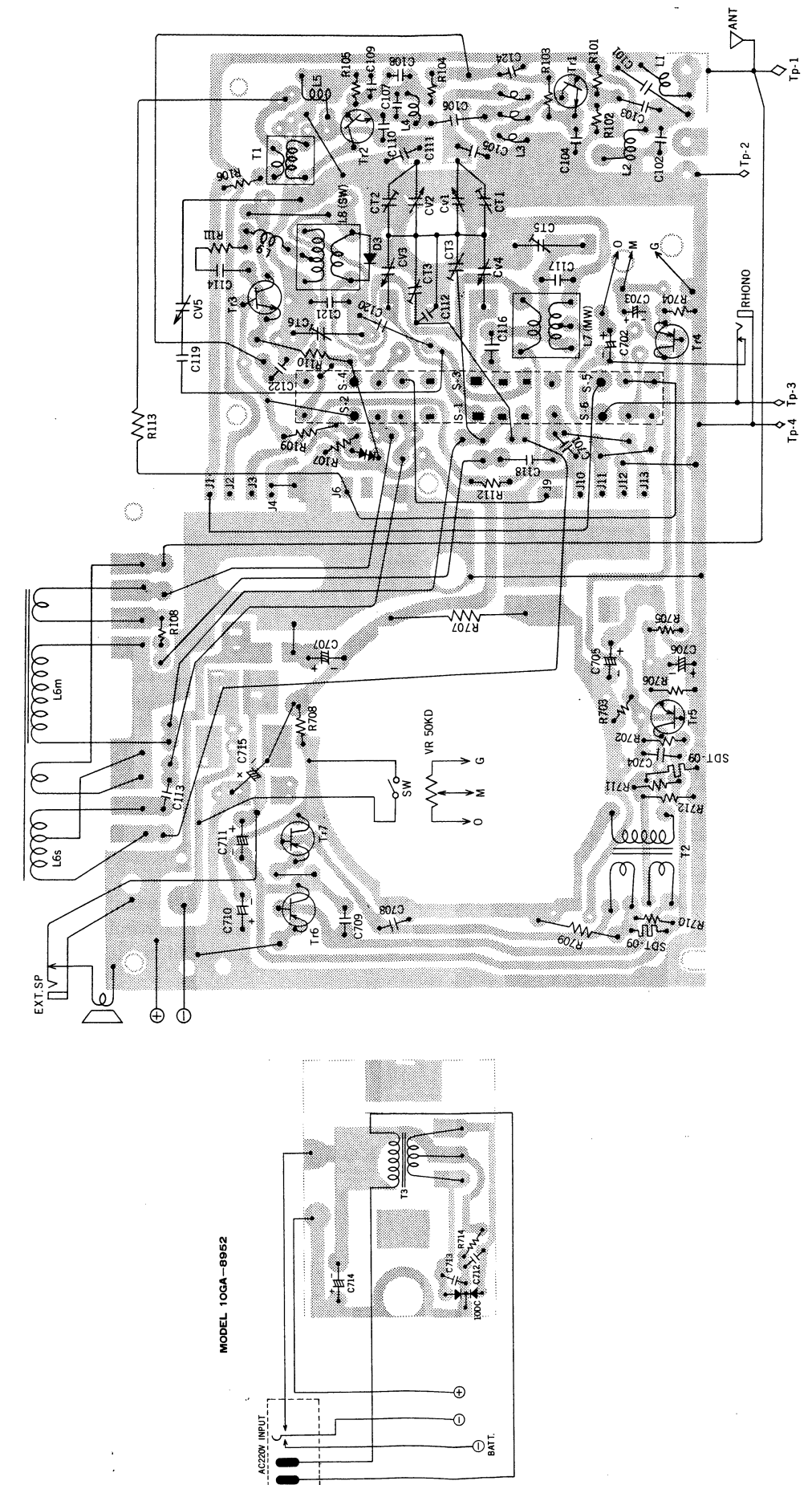
MAIN PARTS IDENTIFICATION



SCHEMATIC DIAGRAM

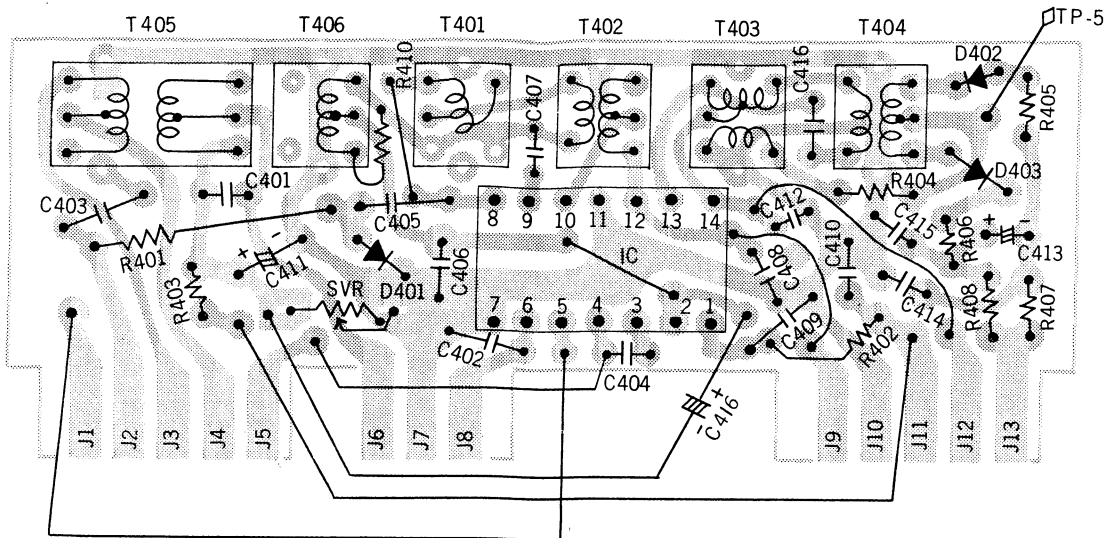


INTER PARTS WIRING ILLUSTRATION



IF ASSEMBLED BLOCK (IF-300)

INTER PARTS WIRING ILLUSTRATION



VOLTAGE CHART OF IC's TERMINALS

The number of connector leads	1	2	3	4	5	6	7
Voltage	2.55V	2.98V	0.67V	1.3V	1.38V	0.72V	0V
The number of connector leads	14	13	12	11	10	9	8
Voltage	5V (4.7V)	5V (4.7V)	0.05V (2.02V)	0V	0.03V (2.02V)	0.65V	2.9V

NOTE:

Measurements are taken from common negative line to respective terminals.
Values in parentheses shows FM operation.
It is right to judge that IC works satisfactorily when a measured voltage of terminal "2" is in a range of 3 ± 0.2 volts.

ALIGNMENT PROCEDURES

IF Assembled Block (IF-300) shall not require any arrangement in ordinary servicing, as it has been factory-adjusted completely. When there is some faulty found in it, it may be replaced easily by new one.

How to set Semi-fixed Resistor (SVR)

A semi-fixed resistor (SVR 50K) is adjusted and set in such a way as to develop 0.5 volt between the terminal J5 and J8. In order to check this value, use a 0.1 miliampere range of circuit tester and connect a 50K ohm resistor with one of its terminals in series. A reading of 10 micro-amperes on the meter is correct, when applied and measured across two terminals. The adjustable resistor, however, is inaccessible in a condition that it is built into a radio unit.

PARTS LIST (IF-300)

SCHEMATIC LOCATION	PART NO.	DESCRIPTION	SCHEMATIC LOCATION	PART NO.	DESCRIPTION
T401	R-W5T361-3	IF Transformer - FM	(FIXED VALUE RESISTORS)		
T402	R-W5T364-3	IF Transformer - FM	R401	R-R682K	6.8K ohms $\pm 10\%$ $\frac{1}{4}W$
T403	R-W5T309-3	IF Transformer - FM	R402 R405 R406	R-R102K	1K ohms $\pm 10\%$ $\frac{1}{4}W$
T404	R-W5T310-3	IF Transformer - FM	R403	R-R153K	15K ohms $\pm 10\%$ $\frac{1}{4}W$
T405	R-W5T589-3	IF Transformer - AM	R404	R-R271K	270 ohms $\pm 10\%$ $\frac{1}{4}W$
T406	R-W5T602-3	IF Transformer - AM	R407 R408	R-R562K	5.6K ohms $\pm 10\%$ $\frac{1}{4}W$
	LA-1200 or LA-1201	Integrated Circuit	R409	R-R152K	1.5K ohms $\pm 10\%$ $\frac{1}{4}W$
D401	1S188 AM	Diode	R410	R-R473K	47K ohms $\pm 10\%$ $\frac{1}{4}W$
D402 D403	1S188 FM	Diode - discriminator	(FIXED VALUE CAPACITORS)		
SVR	R-11010	Semi-fixed Resistor 50K	C401	R-CQS502M	Mylar 0.005 μF $\pm 20\%$
C411	R-C9205	Electrolytic Capacitor 10 μF 6.3V	C402 C403 C406 C412	R-CKD203Z	Ceramic 0.02 μF +80%
C413 C416	R-C9882	Electrolytic Capacitor 4.7 μF 6.3V	C404 C408 C409 C410	R-CKS103Z	Ceramic 0.01 μF +80%
			C405	R-CKD100K	Ceramic 10pF $\pm 10\%$ mini
			C407	R-CKD201M	Ceramic 200pF $\pm 20\%$ mini
			C414 C415	R-CKD102Z	Ceramic 0.001 μF +80% mini
			C416	R-CKD350K	Ceramic 35pF $\pm 10\%$ mini

PARTS LIST (10GA-895Z)

PART NO.	DESCRIPTION	Q'TY	SCHEMATIC LOCATION	PART NO.	DESCRIPTION
(HOUSING)					
R-AR	Housing Assembly - front & back complete	1	(MISCELLANEOUS)		
R-S81833	Front Housing Frame	1	IF-300	IF Assembled Block	
R-311157	Side Plastic	1	R-S6463a	Speaker 4" 4 ohms	
R-311158	Side Plastic w/ jack opening	1	R-S6365	Earphone	
R-262198	Badge SANYO	1	R-S1382	Telescopic Antenna	
R-38216	Dial Scale	1	R-23676	Lug Terminal	
R-262203	Metal Strip AC/Battery	1	R-113519	Shield Case - for IF-300	
R-471961	Battery Instruction	1	R-S2180	Jack - PHONO, EARPHONE	
R-	Open-pore Foam Cushion 25x15x8t	1	R-S81847	AC Cord 250V 6A	
R-36297	Ribbon - battery-take-out	1	R-S2191	Jack - AC input	
R-311156	Compartment Lid - battery	1	R-15341	Taper Spring - negative terminal	
R-471937	IC Label	1	R-23929	Battery Terminal - positive	
R-S81834	Back Housing Assembly	1	R-23899	Lug Terminal - fine tuning capacitor	
R-262197	Metal Strip	1	R-25239a	Spring Wire - grounding of tun. cap.	
R-471937	Specification Sheet	1	Tp-4	R-S3232 ①	Test Point
R-262201	Marking Metal - FM MW SW	1	Tp-3	R-S3232 ②	Test Point
R-S81772	Knob - tuning control	1	(FIXED VALUE RESISTORS)		
R-S81773	Knob - volume & fine tuning	2	R101 R104 R107 R110	R-R222K	2.2K ohms
R-36137	Switch Cover - band switch	1	R102	R-R473K	47K ohms
R-S81771	Pointor	1	R103	R-R121K	120 ohms
R-S81770	Handle	1	R105	R-R154K	150K ohms
R-241556	Stud Screw - handle mtg ISO	2	R106 R112 R113 R707	R-R221K	220 ohms
R-113465	Stopper - handle mtg	2	R108	R-R470K	47 ohms
R-	Ethylene Washer 9.3 ϕ x 5.3 ϕ x 0.3t handle mtg	4	R109	R-R562K	5.6K ohms
R-113377	Metal Mount - speaker mtg	1	R111	R-R150K	15 ohms
R-262304	Metal Disc - telescopic antenna	1	R702	R-R223K	22K ohms
R-311282	Plastic Cover - on back housing	1	R703	R-R472K	4.7K ohms
R-36292	Vinyl Sheet - speaker's yoke	1	R704	R-R151K	150 ohms
			R705	R-R683K	68K ohms
			R706	R-R391K	390 ohms
			R708 R710 R712	R-R101K	100 ohms
			R709 R711	R-R102J	1K ohms $\pm 5\%$
			R714	R-R820K	82 ohms
(CHASSIS)					
R-39498	Plastic Chassis	1	(FIXED VALUE CAPACITORS)		
R-	Paper Sheet 38.5x124.5 on plastic chassis	1	C101	R-CKD030K	Ceramic 3pF $\pm 0.25pF$ mini
R-424485	Paper Sheet on plastic chassis	1	C102 C112	R-CKD150K	Ceramic 15pF $\pm 10\%$ mini
R-241571	Tuning Shaft	1	C103 C108 C704	R-CKD501M	Ceramic 500pF $\pm 20\%$ mini
R-39447	Drum	1	C104 C109 C124	R-CKD102Z	Ceramic 0.001 μF +80%
R-S7083	Special Screw - drum mtg	1	C105	R-CKD130K	Ceramic 13pF $\pm 10\%$ mini
R-275021	Pulley	1	C106 C110	R-CKD040K	Ceramic 4pF $\pm 0.5pF$ mini
R-27064	Pulley	1	C107	R-CKD300K	Ceramic 30pF $\pm 10\%$ mini
R-113552	Metal Mount - pulley mtg	1	C111	R-CKD150K	Ceramic 15pF $\pm 10\%$ N750
R-24344	Pulley Shaft	1	C113 C125	R-CQS103M	Mylar 0.01 μF $\pm 20\%$
R-27077	Pulley	1	C114 C118	R-CQS502M	Mylar 0.005 μF $\pm 20\%$
R-	Dial Cord 0.3 ϕ tetron 850mm	1	C116	R-CQT311K	Styrol 310pF $\pm 10\%$ mini
R-128231	Tension Spring - dial cord stringing	1	C117	R-CKD120K	Ceramic 12pF $\pm 10\%$ N2000
R-44065	Cushion - tuning capacitor mtg	1	C119	R-CKD050K	Ceramic 5pF $\pm 10\%$ mini
R-261416	Holder - antenna coil mtg	1	C120	R-CQT312K	Styrol 3100pF $\pm 10\%$ mini
R-	Rubber Cushion 32x10x1t - antenna coil mtg	2	C121	R-CKD200K	Ceramic 20pF $\pm 10\%$ mini
(SEMICONDUCTORS)					
Tr1	2SC668D	Transistor (for RF stage)	C712 C713	R-CKD103Z	Ceramic 0.01 μF +80%
Tr2	2SC772C	Transistor (for oscillator stage)	C123 C707 C126	R-C9875	Electrol. 220 μF 10V
Tr3	2SA222	Transistor (green color)	C708 C709 C716 C718	R-CKD203Z	Ceramic 0.02 μF +80%
Tr4	2SB185	Transistor (black color)			
Tr5	2SB186B	Transistor (hfe 95~210)			
	2SB175B				
Tr6 Tr7	2SB22	Transistor (blue color)			
D1 D2	SDT-09	Thermistor			
D3	MA-26	Diode			
	1S188AM	Diode			
	R-S1347	Rectifier 1S185D or 10DC			
(CONTROLS)					
Cv5	R-C1126	Variable Capacitor - main tuning			
VR	R-C1132	Variable Capacitor - fine tuning			
	R-R11673	Variable Resistor - volume control, 50K D			
	R-S4412	Slide Switch - band selector			
CTS CT6	R-C0057a	Trimmer			
(COILS & TRANSFORMERS)					
L1 L9	R-W9016	VHF Coil 10 $\frac{1}{2}$ turns			
L2	R-W9015	VHF Coil 7 $\frac{1}{2}$ turns			
L3	R-W9034	VHF Coil 1 $\frac{1}{2}$ turns			
L4	R-W9018	VHF Coil 6 $\frac{1}{2}$ turns			
L5	R-W9058	VHF Coil 4 $\frac{1}{2}$ turns			
L6	R-W2413	Antenna Coil AM			
L7	R-W8251-4	Oscillator Coil MW			
L8	R-W8250-4	Oscillator Coil SW			
T1	R-W5T336-3	IF Transformer			
T2	R-W6255-2	Input Transformer			
T3	R-W7152	Power Transformer AC220V			